

A Multi-Wavelength Transceiver for In Situ Validation of Airborne Remote Sensing Instruments, Phase II Project

SBIR/STTR Programs | Space Technology Mission Directorate (STMD)



ABSTRACT

The overall goal of this Phase II SBIR effort is to develop a three-wavelength, backscatter transceiver for in situ validation of ongoing High Spectral Resolution Lidar measurements. The key innovation in the effort is the use of a multi-element, non-linear waveguide for highly efficient, three wavelength generation in a collinear geometry ideally suited for use in the backscatter nephelometer at the HSRL wavelengths currently under development with NASA Langley's Aerosol Research Group Experiment. Developing an in-flight, backscatter measurement at the three HSRL wavelengths is a critical acquisition for the LARGE program in order both to validate and to establish a direct link between the existing suite of instruments flown to determine of the microphysical properties of aerosols and the remote HSRL measurement. The proposed in situ instrument will validate ongoing remote sensing measurements while further informing climate models through more accurate estimates of atmospheric aerosol distributions.

ANTICIPATED BENEFITS

To NASA funded missions:

Potential NASA Commercial Applications: AdvR is planning to continue developing the technology in close coordination with the NASA LARGE team. AdvR is targeting infusion with LARGE scientists in coordination with the HSRL program. The proposed transceiver is well suited to provide the link between remote Lidar measurements and existing in situ instruments. Missions similar to SABOR or NAAMES are suitable fits for the technology demonstration.

To the commercial space industry:

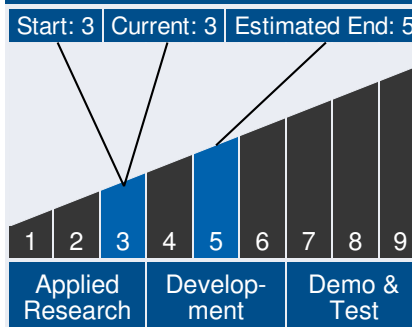
Potential Non-NASA Commercial Applications: AdvR is targeting commercialization in two segments: OEMs and researchers from university and government labs. AdvR will focus efforts on delivering prototype transceivers to OEMs for eventual integration into their nephelometer product lines. Supporting



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Technology Maturity



Management Team

Program Executives:

- Joseph Grant
- Laguduva Kubendran

Program Manager:

- Carlos Torrez

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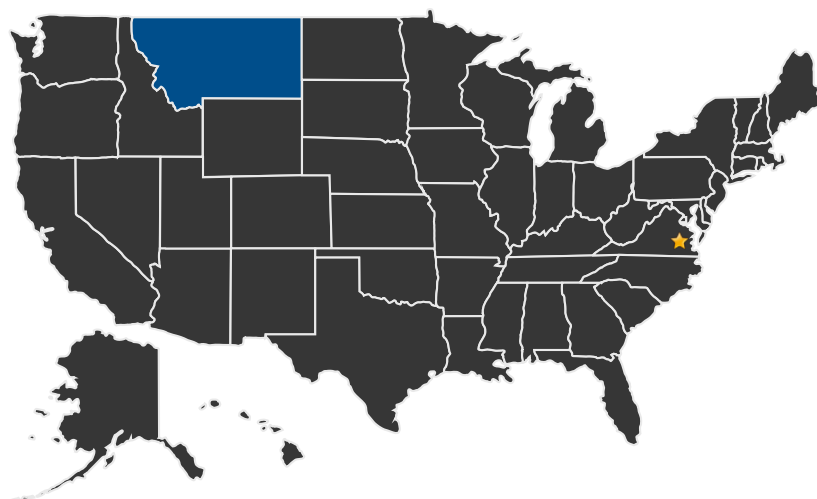
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revenue will come from direct sales to researchers developing their own in-situ measurement systems. Other applications potentially interested in the 3 wavelength source are environmental and pollution monitoring and laser inspection and diagnostics.

U.S. WORK LOCATIONS AND KEY PARTNERS



■ U.S. States
With Work

★ **Lead Center:**
Langley Research Center

Other Organizations Performing Work:

- ADVR, Inc. (Bozeman, MT)

PROJECT LIBRARY

Presentations

- Briefing Chart
 - (<http://techport.nasa.gov:80/file/23164>)

Management Team *(cont.)*

Principal Investigator:

- Justin Hawthorne

Technology Areas

Primary Technology Area:

Science Instruments,
Observatories, and Sensor
Systems (TA 8)

- └ Remote Sensing Instruments
and Sensors (TA 8.1)
 - └ Lasers (TA 8.1.5)

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IMAGE GALLERY



Three Wavelength Backscatter Transceiver

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DETAILS FOR TECHNOLOGY 1

Technology Title

A Multi-Wavelength Transceiver for In Situ Validation of Airborne Remote Sensing Instruments, Phase II

Potential Applications

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